



# Configuring Port Tracking

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This chapter describes how to configure port tracking.

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## Configuring Port Tracking

Cisco SAN switches offer the port tracking feature on virtual Fibre Channel interfaces. This feature uses information about the operational state of the link to initiate a failure in the link that connects the edge device. This process of converting the indirect failure to a direct failure triggers a faster recovery process towards redundant links. When enabled, the port tracking feature brings down the configured links based on the failed link and forces the traffic to be redirected to another redundant link.

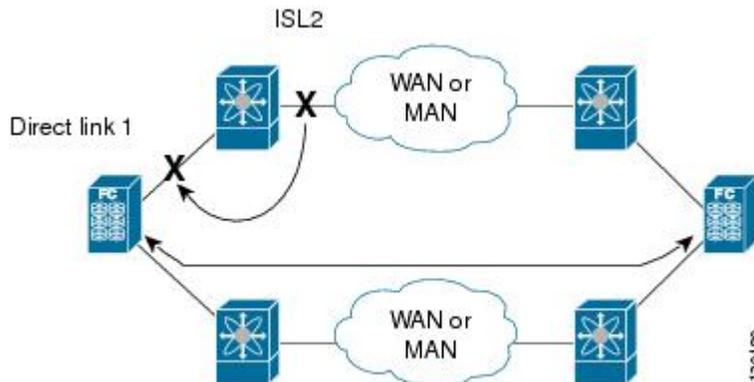
## Information About Port Tracking

Port tracking allows you to use information about the operational state of the link so that you can initiate a failure in the link that connects the edge device. Converting the indirect failure to a direct failure triggers a faster recovery process towards redundant links. When enabled, port tracking brings down the configured links based on the failed link and forces the traffic to be redirected to another redundant link.

Generally, hosts can instantly recover from a link failure on a link that is immediately (direct link) connected to a switch. However, recovering from an indirect link failure between switches in a WAN or MAN fabric with a keepalive mechanism is dependent on several factors such as the timeout values (TOVs) and on registered state change notification (RSCN) information.

In the following figure, when the direct link 1 to the host fails, recovery can be immediate. However, when the ISL 2 fails between the two switches, recovery depends on TOVs, RSCNs, and other factors.

Figure 1: Traffic Recovery Using Port Tracking



Port tracking monitors and detects failures that cause topology changes and brings down the links that connect the attached devices. When you enable this feature and explicitly configure the linked and tracked ports, the switch software monitors the tracked ports and alters the operational state of the linked ports on detecting a link state change.

The following terms are used in this chapter:

- **Tracked ports**—A port whose operational state is continuously monitored. The operational state of the tracked port is used to alter the operational state of one or more ports. Virtual Fibre Channel, VSAN, SAN port channel, or a Gigabit Ethernet port can be tracked. Generally, ports in E and TE port modes can also be F ports.
- **Linked ports**—A port whose operational state is altered based on the operational state of the tracked ports. Only virtual E or VE ports can be linked ports.

Port tracking has the following features:

- The application brings the linked port down when the tracked port goes down. When the tracked port recovers from the failure and comes back up again, the linked port is also brought up automatically (unless otherwise configured).
- You can forcefully continue to keep the linked port down, even though the tracked port comes back up. In this case, you must explicitly bring up the linked port when required.

### Related Topics

- [About RSCN Information](#)
- [Fibre Channel Timeout Values](#)

## Guidelines and Limitations for Port Tracking

Port tracking has the following configuration guidelines and limitations:

- Port tracking is supported only on virtual fibre channel (VFC) interfaces.
- Verify that the tracked ports and the linked ports are on the same Cisco switch.
- Be aware that the linked port is automatically brought down when the tracked port goes down.
- Do not track a linked port back to itself (for example, Port fc2/2 to Port fc2/4 and back to Port fc2/2) to avoid recursive dependency.

## Default Settings for Port Tracking

The following table lists the default settings for port tracking parameters.

**Table 1: Default Port Tracking Parameters**

Parameters	Default
Port tracking	Disabled
Operational binding	Enabled along with port tracking

## Configuring Port Tracking

Before configuring port tracking, consider the following guidelines:

- Verify that the tracked ports and the linked ports are on the same Cisco switch.
- Be aware that the linked port is automatically brought down when the tracked port goes down.
- Do not track a linked port back to itself (for example, Port fc2/2 to Port fc2/4 and back to Port fc2/2) to avoid recursive dependency.

### Enabling the Port Tracking Feature

You can enable port tracking.

#### Before you begin

You must enable the port track feature from the storage VDC.

#### SUMMARY STEPS

1. **configuration terminal**
2. **switchto vdc vdc-name**
3. **configuration terminal**
4. **feature port-track**
5. (Optional) **show feature | port-track**
6. (Optional) **copy running-config startup-config**

#### DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>configuration terminal</b>  <b>Example:</b> <pre>switch# configure terminal switch(config)#</pre>	Enters configuration mode.

	Command or Action	Purpose
<b>Step 2</b>	<b>switchto vdc <i>vdc-name</i></b> <b>Example:</b> <pre>switch(config)# switchto vdc storage switch-storage#</pre>	Switches to the storage VDC. The <i>vdc-name</i> can be any case-sensitive, alphanumeric string up to 32 characters.
<b>Step 3</b>	<b>configuration terminal</b> <b>Example:</b> <pre>switch-storage# configure terminal switch-storage(config)#</pre>	Enters configuration mode.
<b>Step 4</b>	<b>feature port-track</b> <b>Example:</b> <pre>switch-storage(config)# feature port-track</pre>	Enables the port tracking feature.
<b>Step 5</b>	(Optional) <b>show feature   port-track</b> <b>Example:</b> <pre>switch-storage(config)# show feature  port-track</pre>	Displays information about the port tracking feature.
<b>Step 6</b>	(Optional) <b>copy running-config startup-config</b> <b>Example:</b> <pre>switch-storage(config)# copy running-config startup-config</pre>	Copies the running configuration to the startup configuration.

## Configuring Linked Ports

You can link ports using one of two methods:

- Operationally binding the linked ports to the tracked port (default).
- Continuing to keep the linked port down forcefully, even if the tracked port has recovered from the link failure.

## Binding a Tracked Port

You can bind a track port head.

When you configure the first tracked port, operational binding is automatically in effect. When you use this method, you have the option to monitor multiple ports or monitor ports in one VSAN.

### Before you begin

- Ensure you are in the storage VDC.

## SUMMARY STEPS

1. **configure terminal**
2. **interface vfc *if-number***
3. **port-track interface vfc *if-number* | san-port-channel *port* | vfc-port-channel *port***

**DETAILED STEPS**

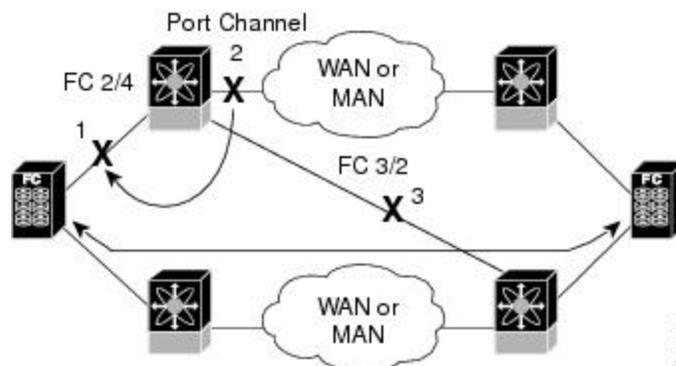
	<b>Command or Action</b>	<b>Purpose</b>
<b>Step 1</b>	<b>configure terminal</b> <b>Example:</b> switch# configure terminal switch(config)#	Enters configuration mode.
<b>Step 2</b>	<b>interface vfc if-number</b> <b>Example:</b> switch(config)# interface vfc 2 switch(config-if)#	Enters the interface configuration mode for the linked port. You can now configure the tracked ports.
<b>Step 3</b>	<b>port-track interface vfc if-number   san-port-channel port   vfc-port-channel port</b> <b>Example:</b> switch(config-if)# port-track interface vfc-port-channel 1	Specifies the tracked port. When the tracked port goes down, the linked port is also brought down.

**Tracking Multiple Ports**

You can control the operational state of the linked port based on the operational states of multiple tracked ports. When more than one tracked port is associated with a linked port, the operational state of the linked port will be set to down only if all the associated tracked ports are down. Even if one tracked port is up, the linked port will stay up.

In the following figure, only if both ISLs 2 and 3 fail, will the direct link 1 be brought down. Direct link 1 will not be brought down if either 2 or 3 are still functioning as desired.

*Figure 2: Traffic Recovery Using Port Tracking*



**Monitoring Ports in a VSAN**

You can optionally configure one VSAN from the set of all operational VSANs on the tracked port with the linked port by specifying the required VSAN. This level of flexibility provides higher granularity in tracked ports. In some cases, when a tracked port is a TE port, the set of operational VSANs on the port can change dynamically without bringing down the operational state of the port. In such cases, the port VSAN of the linked port can be monitored on the set of operational VSANs on the tracked port.

If you configure this feature, the linked port is up only when the VSAN is up on the tracked port. The specified VSAN does not have to be the same as the port VSAN of the linked port.

## Monitoring Ports in a VSAN

You can monitor a tracked port in a specific VSAN.

### SUMMARY STEPS

1. **configure terminal**
2. **interface vfc *if-number***
3. **port-track interface san-port-channel 1 vsan 2**
4. **no port-track interface san-port-channel 1 vsan 2**

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b> <b>Example:</b> <pre>switch# configure terminal switch(config)#</pre>	Enters global configuration mode.
<b>Step 2</b>	<b>interface vfc <i>if-number</i></b> <b>Example:</b> <pre>switch(config)# interface vfc 3</pre>	Configures the specified interface and enters the interface configuration mode. You can now configure tracked ports.
<b>Step 3</b>	<b>port-track interface san-port-channel 1 vsan 2</b> <b>Example:</b> <pre>switch(config-if)# port-track interface san-port-channel 1 vsan 2</pre>	Enables tracking of the SAN port channel in VSAN 2.
<b>Step 4</b>	<b>no port-track interface san-port-channel 1 vsan 2</b> <b>Example:</b> <pre>switch(config-if)# port-track interface san-port-channel 1 vsan 2</pre>	Removes the VSAN association for the linked port. The SAN port channel link remains in effect.

## Forcefully Shutting down

If a tracked port flaps frequently, tracking ports using the operational binding feature may cause frequent topology changes. You might choose to keep the port in the down state until you are able to resolve the reason for these frequent flaps. Keeping the flapping port in the down state forces the traffic to flow through the redundant path until the primary tracked port problems are resolved. When the problems are resolved and the tracked port is back up, you can explicitly enable the interface.

If you configure this feature, the linked port continues to remain in the shutdown state even after the tracked port comes back up. You must explicitly remove the forced shut state (by administratively bringing up this interface) of the linked port once the tracked port is up and stable.

## Forcefully Shutting Down a Tracked Port

You can forcefully shut down a tracked port.

### SUMMARY STEPS

1. **configure terminal**
2. **interface vfc *if-number***
3. **port-track force-shut**
4. **no port-track force-shut**

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b> <b>Example:</b> <pre>switch# configure terminal switch(config)#</pre>	Enters global configuration mode.
<b>Step 2</b>	<b>interface vfc <i>if-number</i></b> <b>Example:</b> <pre>switch(config)# interface vfc 5</pre>	Configures the specified interface and enters the interface configuration mode. You can now configure tracked ports.
<b>Step 3</b>	<b>port-track force-shut</b> <b>Example:</b> <pre>switch(config-if)# port-track force-shut</pre>	Forcefully shuts down the tracked port.
<b>Step 4</b>	<b>no port-track force-shut</b> <b>Example:</b> <pre>switch(config-if)# no port-track force-shut</pre>	Removes the port shutdown configuration for the tracked port.

